



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

MEMORANDUM

4/25/19

**SUBJECT:** Review of Waiver Request for Ecological Data for Monohalohydantoin

PC Code(s): 006315	DP Barcode(s)/No(s): 450346
Decision No.: 547415	Reregistration No(s). RegRev-3055-1
Petition No(s): NA	Regulatory Action: DER
Risk Assess type: NA	Case No(s): 3055
TXR No.: NA	CAS No(s): 16079-88-2, 32718-18-6
MRID No(s): 50638901	40 CFR: NA

**From:** Diana Hsieh, Biologist *DHsieh*  
William Erickson, Biologist *WErickson*  
Risk Assessment and Science Support Branch  
Antimicrobials Division (7510P)

**Thru:** Laura Parsons, Acting Branch Chief *Laura Parsons*  
Risk Assessment and Science Support Branch  
Antimicrobials Division (7510P)

**To:** Daniel Halpert, Chemical Review Manager  
Regulatory Management Branch II  
Antimicrobial Division (7510P)

INTRODUCTION

ACC Halohydanotons Work Group has requested a waiver for the following environmental fate studies: 850.3300, 835.3110/.3220/.3280/.3240. The workgroup has also requested a waiver for the following ecological toxicity studies: 850. 1300/.1350/.1400/.4100/.4150/.4400/.4500/.4550.

The Agency has reviewed the waiver request (MRID 50638901) and believes it is acceptable to waive the above-mentioned ecological and environmental fate data for monohalohydantoins.

## DISCUSSION

### Environmental Fate

The Agency possesses data (ACC# 263983 and MRID 42466201) that shows that under abiotic conditions, dihaloalkylhydantoins hydrolyze and lose the first halide with a half-life of less than 1 hour, followed by the loss of the second halide within 24 hours at pH 5, 7, and 9. Due to the fact that the monohalohydantoins could be present in the environment for up to a day, the Agency was concerned of the possible environmental exposure to the monohalohydantoins.

ACC cited several studies to support the rapid degradation of the monohalohydantoins in the presence of organic content within their waiver request (MRID 50638901). A modified hydrolysis study conducted by ACC in 2005 (MRID 50554201) demonstrated nearly 100% conversion of BCDMH<sup>1</sup> to dimethylhydantoin (DMH) within 335 minutes (5.6 hours). Additionally, an anaerobic aquatic metabolism study (MRID 42738401) supports the claim that organic load will increase degradation rate of the halogenated hydantoins.

The Agency agrees that the presence of organic materials will degrade monohalohydantoins to DMH or ethylmethylhydantoin (EMH) prior to release into the environment or wastewater treatment plants. Therefore, the environmental fate data may be waived.

### Ecological Toxicity

Based on the discussion above, concluding that there will be little if any environmental exposure to monohalohydantoins, the Agency waives the following ecological toxicity studies: 850.1300/.1350/.1400/.4100/.4150/.4400/.4500/.4550.

## COMMENTS

There were incorrect statements/typographical errors and inconsistencies made within the waiver requests. These do not change the decision to waive the studies.

In Appendix II of the submitted waiver request it states that “DMH degraded rapidly in water/sediment” and cites MRID 42738401. This is an incorrect claim. Page 19 of the study states, “The degradation of DMH was not observed over the course of this study [6 months]. These observations are corroborated by a 28-day activated sludge test... which results showed an average of 1% decomposition of DMH by BOD and... 5% by TOC measurements.” Appendix II further claims that DMH was found to be readily biodegradable based on a CO<sub>2</sub> evolution test (Clarke, 2007). The Agency has not been able to locate this study. This claim is in direct contradiction with MRID 42738401, quoted above. Based on the data the Agency currently possesses, DMH is expected to be stable to degradation. Additional evidence/data must be submitted to prove otherwise.

Table 4 has several errors regarding half-lives of and rate constants for BCDMH.

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<sup>1</sup> 1-bromo-3-chloro-5, 5-dimethylhydantoin

The following references cited within the waiver request could not be located:

- Clarke N (2007) Ready Biodegradability, SafePharm Laboratories, SPL Project No 2374/001
- Daly D (1987) Hydrolysis as a Function of pH at 25°C with  $^{14}\text{C}$  5,5-Dimethylhydantoin, Analytical Bio-Chemistry Laboratories, Inc, ABC Report 35181